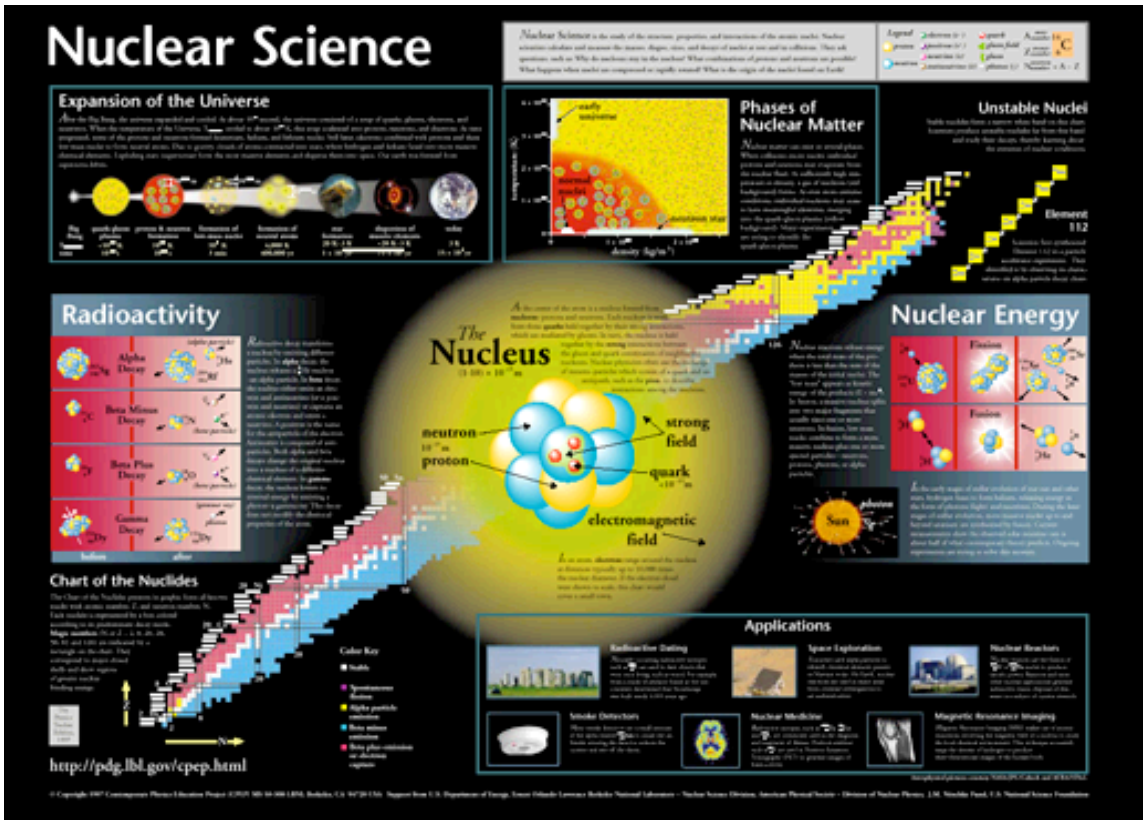
NUCLEAR SCIENCE



A GUIDE

TO THE

NUCLEAR SCIENCE WALL CHART

or

You don't have to be a Nuclear Physicist to Understand Nuclear Science.

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Third Edition – November 2003

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First Edition: March 1998

Editor's Note:

In April 1997, we circulated about 300 copies of this booklet throughout the United States and the rest of world. Comments came from teachers who taught all levels and from nuclear scientists throughout the world. From these many excellent comments, we prepared a second version in the summer of 1997. During a week long summer workshop, sponsored by the American Physical Society (APS)—Division of Nuclear Physics, John Cramer, James O'Connell, Ken Krane, Margaret McMahan, Eric Norman, Karen Street and I, completely revised the previous version. Again, we circulated the manuscript and once again, we received many excellent suggestions. We have tried to incorporate as many of these improvements as possible.

This teacher's guide is a work in progress. We welcome your advice and suggestions. We need feedback that describes how useful you have found this guide and what sections you used. We would like success stories as well as discussions of the problems that you have found. We have tried to edit this booklet as carefully as possible. Undoubtedly, there are sections that are too abstract, too abstruse, or perhaps misleading. There are still many typos. Your comments are essential to make the next edition even better. Please send them to

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Many other people besides the authors contributed to the creation of this guide. Because of the large number of contributions, we have only been able to acknowledge a few as authors. We thank the Lawrence Berkeley National Laboratory, U.S. Department of Energy, the American Physical Society—Division of Nuclear Physics, and the J.M. Nitschke Fund for their support and encouragement in preparing this manuscript.

Howard Matis, Berkeley, California, March 1998
For the Nuclear Wall Chart Committee

Notes on the Second Edition

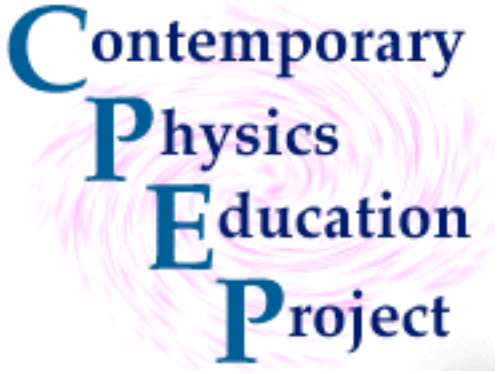
After three printings, we have exhausted the existing booklets. There have been a number of importance advances in our field since the publication of the first editions. For instance, several new elements have been discovered. Most scientists now believe that neutrinos have some very small but unknown mass. The SNO detector and the RHIC accelerator started operation. Because of these changes, we have decided to modify a few chapters and make some typographical changes. In addition, a number of web addresses have been updated. We would like to thank Justin Matis for updating many of the figures and making some corrections to the text.

Howard Matis, Berkeley, California, April 2001

Notes on the Third Edition

Many new advances occurred since the second edition was published. We now know that the neutrino has a non-zero mass and it can transform from one type to another. Several of the previously claimed elements could not be verified and therefore their claim had to be withdrawn. A previous unnamed element now has an official symbol. Experiments at the RHIC accelerator have produced spectacular results. Finally, two physicists were awarded a Nobel Prize for their research on neutrinos. Many scientists consider their work to fall under the field of nuclear physics. We would like to thank Heino Nitsche and Darlene Hoffman for reviewing the chapter on heavy elements.

Howard Matis, Berkeley, California, November 2003



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71960-04	Guide to Nuclear Science with Transparency	